Issues for Breakout Groups Discussions

DAY I

Model Development Issues

1. What are the primary barriers to the design and operation of technology modules (e.g., a combustion or gasification subsystem, a gas separation process, a gas turbine or fuel cell, or a fuels synthesis reactor) for a Vision 21 plant for which models can help? What questions do technology developers want the models to answer? What questions do plant designers want the models to answer? What are the barriers to design and operation of the integrated plant?

2. Illustrate models within each application category (e.g., design, process evaluation, cost evaluation, plant operation/control). Prioritize the models based on importance to technology developers. Indicate what is being modeled and the benefits provided.

3. How will the results of the models be used? What level of accuracy and speed is required?

4. What are the primary barriers to model development? What experimental data are needed to develop and validate these models? What strategy should be used to develop the models? What estimated level of effort and time is required?

5. What models are currently available? What is the state-of-the-art? What are alternatives to existing software? What are the obstacles to improving that software?

6. What is the order of importance to technology developers of stereoscopic, immersive visualization; Internet-based, secure, concurrent engineering; good process engineering codes; accurate CFD codes; robust control protocols; simulation help with start-up and upset; CAD design; economic/risk analysis; and software integration and portability? What is the order of importance for plant design?

Information Exchange/Communications Issues

1. Describe a plan for transferring information between persons whose main business is to develop technology modules and persons who develop models and simulation systems. What are the key issues?

2. What are the intellectual property concerns? How should they be addressed?

Government Role

1. What software development needs to be funded by NETL? What will the market supply anyway by 2010?

2. What should be the balance between adapting existing commercial codes and developing new codes?

3. What efforts can be targeted to yield near-term successes and what needs long-term funding? What efforts are high risk and which low?

DAY II

Simulator Development Issues

1. What has been learned on day one to guide simulator development?

2. What needs to be simulated and what are the required characteristics of the product? Indicate priorities. What is reasonable to simulate with today's technology?

3. What models are needed for the simulator? What information must be provided by the models to the simulator? What information must be provided to the models by the simulator?

4. How do we deal with systems integration issues (combining technology modules and components into complete energy plants) in simulator development?

Model/Simulator - User Interface

1. How should users interact with the simulator? How should output be presented? What should be visualized?

2. What are the barriers to simulation/visualization?

3. What type of software do technology developers themselves want to run and for what type of software will technology developers use a contractor?

Next Steps

1. What should be done as a follow-up to this workshop?